## PCT

(). MCGRATH, Kevin [/]; (). GREEN, Theodore, M.; ().

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- (54) Title: PATTERNED BINDING OF FUNCTIONALIZED MICROSPHERES FOR OPTICAL DIFFRACTION-BASED BIOSENSORS
- (54) Titre: LIAISON A MOTIFS DE MICROSPHERES FONCTIONNALISEES DESTINEES A DES BIOCAPTEURS BASES SUR LA DIFFRACTION OPTIQUE

#### (57) Abstract

The present invention provides an inexpensive and sensitive system and method for detecting analytes present in a medium. The system comprises a diffraction enhancing element, such as functionalized microspheres, which are modified such that they are capable of binding with a target analyte. Additionally, the system comprises a polymer film, which may include a metal coating, upon which is printed a specific, predetermined pattern of analyte-specific receptors. Upon attachment of a target analyte to select areas of the polymer film, either directly or with the diffraction enhancing element, diffraction of transmitted and/or reflected light occurs via the physical dimensions and defined, precise placement of the analyte. A diffraction image is produced which can be easily seen with the eye or, optionally, with a sensing device.

#### (57) Abrégé

L'invention concerne un procédé et un système sensibles et bon marché de détection d'analytes présents dans un milieu. Ce système comprend un élément de rehaussement de la diffraction, comme des microsphères fonctionnalisées, lesquelles sont modifiées de telle manière qu'elles puissent se lier à un analyte cible. En outre, le système comprend un film polymère, lequel peut comporter un revêtement métallique, sur lequel est imprimé un motif prédéterminé et spécifique d'un récepteur, lequel est a son tour spécifique d'un analyte. Lors de la fixation d'un analyte cible sur des zones choisies du film polymère, soit directement, soit au moyen de l'élément d'accroissement de la diffraction, la diffraction de la lumière transmise et/ou réfléchie s produit par l'intermédiaire des dimensions physiques et détermine l'emplacement précis de l'analyte. Une image de diffraction est produite qui peut être facilement vue à l'oeil nu, ou le cas échéant, avec un dispositif détecteur.

## **PCT**

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(74) Agents: GREEN, Theodore, M. et al.; Jones & Askew, LLP, 2400 Monarch Tower, 3424 Peachtree Road, N.E., Atlanta, GA 30326 (US). (81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

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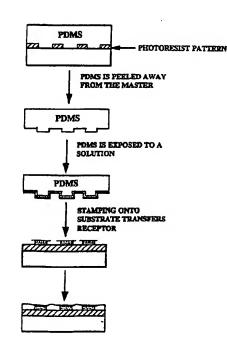
With international search report.

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(54) Title: PATTERNED BINDING OF FUNCTIONALIZED MICROSPHERES FOR OPTICAL DIFFRACTION-BASED BIOSEN-SORS

#### (57) Abstract

The present invention provides an inexpensive and sensitive system and method for detecting analytes present in a medium. The system comprises a diffraction enhancing element, such as functionalized microspheres, which are modified such that they are capable of binding with a target analyte. Additionally, the system comprises a polymer film, which may include a metal coating, upon which is printed a specific, predetermined pattern of analyte-specific receptors. Upon attachment of a target analyte to select areas of the polymer film, either directly or with the diffraction enhancing element, diffraction of transmitted and/or reflected light occurs via the physical dimensions and defined, precise placement of the analyte. A diffraction image is produced which can be easily seen with the eye or, optionally, with a sensing device.



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In attornal Application No PCT/US 99/27671

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Documental	tion searched other than minimum documentation to the extent that a	uch documents are included in the fields so	erchod
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Name and I	mailing address of the ISA European Patent Office, P.B. 5818 Petentiaen 2 NL – 2280 HV Rijsvijk Tel. (431–70) 340–2040, Tx. 31 851 epo ni, Fact (431–70) 340–3018	Authorized officer  Goetz, M	

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